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| 10/009,983 | 03/22/2002 | Bradford Craig Starkie | A-71191/DJB/WEN | 3791 |

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DORSEY & WHITNEY LLP
555 CALIFORNIA STREET, SUITE 1000
SUITE 1000
SAN FRANCISCO, CA 94104

| EXAMINER | |
|---|---|
| SKED, MATTHEW J | |

| ART UNIT | PAPER NUMBER |
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| 2626 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/009,983 | STARKIE, BRADFORD CRAIG | |
| | Examiner | Art Unit | |
| | Matthew J. Sked | 2626 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *23 February 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-3,6 and 8-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6 and 8-39* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 February 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

## DETAILED ACTION

### *Response to Amendment*

1. The objection to the specification is withdrawn in view of the amendment filed 2/23/06.

2. The objection to the drawings is withdrawn in view of the amendment filed 2/23/06.

3. The rejection of claims 29, 32 and 37 under 35 USC 101 is withdrawn in view of the amendment filed 2/23/06.

4. The rejection of claim 18 under 35 USC 112, second paragraph, is withdrawn in view of the amendment filed 2/23/06.

5. Applicant's arguments, filed 2/23/06, with respect to the rejection(s) of claim(s) 1-3, 6 and 8-39, have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Brown et al. (U.S. Pat. 6,604,075).

6. Claims 4, 5 and 7 have been cancelled.

7. Claim 39 is newly added.

### *Claim Rejections - 35 USC § 102*

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the

applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 2, 3, 5, 8 and 29-32 are rejected under 35 U.S.C. 102(e) as being anticipated by Brown et al. (U.S. Pat. 6,604,075).

As per claims 1 and 29-32, Brown teaches a method, system and development tool for developing an interactive system, including:

inputting an application file including application data representative of an application for said system, said application data including operations and input and return parameters, with parameter types for said application (client receives HTML or other mark-up language which would inherently define all the input and output variables for the application, col. 3, lines 57-67 and col. 7, lines 32-46);

generating a dialogue state machine on the basis of said application data, said state machine including slots for each operation and each input parameter, said slots defining data on which said interactive system executes the operations (generates a dialogue graph defining dialogue exchanges between agents and based on the user's input the graph moves to different dialogue states and new web pages hence the graph includes slots defining inputted data, col. 9, lines 43-67 and col. 10, lines 29-37);

generating prompts on the basis of said application data including a prompt listing said operations (web pages consist of a list of prompts, col. 10, lines 1-28); and

generating grammar on the basis of said application data (grammar compiler generates a grammar from the HTML, col. 5, lines 31-50 and col. 7, lines 32-62).

10. As per claim 2, Brown teaches said prompts and grammar are generated on basis of a predetermined pattern or structure for said prompts and grammar (prompts and grammar built from HTML language which includes inserted predetermined tags, col. 4, line 1 to col. 5, line 28).

11. As per claim 3, Brown teaches the grammar includes predefined grammar (grammar network defined form grammar specification grammar hence predefined, col. 5, lines and col. 7, lines 47-62).

12. As per claim 5, Brown teaches said grammar and said state machine include slots defining data on which said interactive system executes the operations (rule of the grammar includes expressions with both name and value holders, col. 5, lines 62-63).

13. As per claim 8, Brown includes as reference Brown et al. (U.S. Pat Pub. 2001/0013001A1) (col. 1, lines 58-62 and col. 7, lines 47-62), cited in the previous office action and herein referred to as Brown-2001.

Brown-2001 teaches executing grammatical inference to enhance the grammar (removes redundancies in the grammar to simplify and enhance the grammar, paragraphs 61-63).

***Claim Rejections - 35 USC § 103***

14. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

15. Claims 9, 10, 19, 20, and 37-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown in view of Kantrowitz et al. (U.S. Pat. 6,618,697).

As per claims 9, 19, 37 and 38, Brown-2001 teaches a method, system and development tool for developing an interactive system, including

processing rules of the grammar (generates grammar code that defines the rules, paragraph 62);

merging equivalent symbols of the grammar (removes redundant state transitions that contain word labels hence merging them, paragraph 63); and

wherein said rules define said slots and include said symbols (grammar code describes rules which would inherently define slots in an interactive system and define the finite state networks that contain the word labels, paragraphs 62 and 63).

Brown does not teach generating additional rules representative of repeated phrases.

Kantrowitz teaches a system for rule-based correction of natural language that creates a rule to correct repeated words (of of -> of, col. 4, lines 1-36).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Brown create rules representative of repeated phrases as taught by Kantrowitz because it would identify redundancies in the speech input hence preventing the system from carrying out unnecessary commands.

16. As per claims 10 and 20, Brown-2001 teaches said rules include slot specification rules including value data representing the meaning of a phrase or term of a slot (must inherently have rules linking the slot to the hyperlinks, paragraph 71).

17. As per claim 39, Brown does not teach wherein said creating step is performed on the basis of observations recorded by said system.

Kantrowitz teaches the rules are use to correct errors in a context-sensitive fashion hence on the basis on an observation by the system (col. 3, lines 12-19).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Brown wherein said creating step is performed on the basis of observations recorded by said system as taught by Kantrowitz because this would allow the system to perform unsupervised learning hence lowering the need for human-intervention.

18. Claims 11-14, 17, 18, 21-24, 27, 28 and 33-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown in view of Kantrowitz and taken in further view of Zadrozny et al. (U.S. Pat. 5,937,385), cited in the previous Office Action.

As per claims 11, 21, 33 and 36, Brown and Kantrowitz do not teach the grammar is hierarchical and said rules include terminal and/or non-terminal symbols, whereby said rules refer to lower level rules to resolve non-terminal symbols.

Zadrozny teaches a system for generating speech recognition grammars where the grammar has rules that define non-terminals and has rules defining the combination of the non-terminals hence making it hierarchical (col. 5, lines 5-28).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Brown and Kantrowitz have a hierarchical grammar with rules including non-terminals as taught by Zadrozny because this would create the

grammar in Backus-Naur form, which is a standard representation of grammar, hence making the grammar simpler to understand.

19. As per claims 12 and 22, Brown and Kantrowitz do not teach the rules generating step includes generating a non-terminal symbol rules from correlated symbols and slot specification rules.

Zadrozny teaches generating a non-terminal symbol rule from correlated symbols and slot specification rules (generates rules based on correlated non-terminal symbols and because these terminals when combined are used to recognize a command it would inherently include slot specification rules, col. 5, lines 5-28).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Brown and Kantrowitz to generate non-terminal symbol rules from correlated symbols and slot specification rules as taught by Zadrozny because it would create a representation for the combination of non-terminals hence allowing the system to recognize a phrase.

20. As per claims 13, 14, 23 and 24, Brown and Kantrowitz do not teach the merging step includes identifying interchangeable symbols on the basis of predetermined merging evidence patterns and determining whether symbols to be merged have compatible slot specification rules and return corresponding slots.

Zadrozny teaches merging interchangeable non-terminal symbols and identifying these symbols based upon the initial grammar rules and these rules would have compatible slot specification rules because they would both be commands to more money (col. 5, line 58 to col. 6, line 13 and Fig. 9D).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Brown and Kantrowitz so the merging step includes identifying interchangeable symbols on the basis of predetermined merging evidence patterns and determining whether symbols to be merged have compatible slot specification rules and return corresponding slots as taught by Zadrozny because this would simplify the grammar hence allowing faster and more precise recognition.

21. As per claims 17, 27 and 34, Brown-2001 teaches the rules include a reference count representing the number of other rules that reference the rule (counts the non-terminals where the non-terminals reference other rules hence indirectly counting the number of rules that reference each rule, col. 6, lines 46-49).

22. As per claims 18, 28 and 35, Brown-2001 teaches the rules are determined on the basis of attribute constraints during said generating step (grammar may be partially precompiled hence the rest of the grammar would be generated using these constraints, paragraph 64).

23. Claims 15, 16, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brown in view of Kantrowitz and taken in further view of Zadrozny and Applicant's admitted prior art.

As per claims 15 and 25, Brown, Kantrowitz and Zadrozny do not teach the rules include a hyperparameter representing use of the rule in observations parsed during said grammatical inference.

Applicant's admitted prior art teaches using hyperparameters in grammar rules (page 11, lines 12-29).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Brown, Kantrowitz and Zadrozny so the rules include a hyperparameter representing use of the rule in observations parsed during said grammatical inference because, as taught in Applicant's admitted prior art, the use of the hyperparameters significantly reduces the amount of computation required as opposed to having to calculate and store rule probabilities (page 11, lines 12-29).

24. As per claims 16 and 26, Brown and Kantrowitz do not teach the evidence patterns represent relationships between rules indicating a merger and corresponding rule formats to be generated when one of said relationships exist between said rules.

Zadrozny teaches the evidence patterns represent relationships between rules indicating a merger and corresponding rule formats to be generated when one of said relationships exist between said rules (initial grammar rules which are related are merged to create new merged rules where the new rules have the same format as the initial rules, col. 5, line 58 to col. 6, line 13).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the system of Brown and Kantrowitz so the evidence patterns represent relationships between rules indicating a merger and corresponding rule formats to be generated when one of said relationships exist between said rules as taught by Zadrozny because it would allow the rules to be merged more quickly.

***Conclusion***

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hank et al. (U.S. Pat. 6,321,198) and Monaco et al. (U.S. Pat. 6,314,402) teach methods for interactive voice response systems that develop a grammar and dialogue state machine based upon HTML data.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Sked whose telephone number is (571) 272-7627. The examiner can normally be reached on Mon-Fri (8:00 am - 4:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MS
8/7/06

DAVID HUDSPETH
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600